

End-of-life decisions in medical practice in Flanders, Belgium: a nationwide survey

Luc Deliens, Freddy Mortier, Johan Bilsen, Marc Cosyns, Robert Vander Stichele, Johan Vanoverloop, Koen Ingels

Summary

Background Our study is a repeat of the Dutch death-certificate study on end-of-life decisions (ELDs). The main objective was to estimate the frequency of euthanasia (the administration of lethal drugs with the explicit intention of shortening the patient's life at the patient's explicit request), physician-assisted suicide (PAS), and other ELDs in medical practice in Flanders, Belgium.

Methods A 20% random sample of 3999 deaths was selected from all deaths recorded between Jan 1 and April 30, 1998. The physicians who signed the corresponding death certificates received one questionnaire by post per death.

Findings The physicians' response rate was 1355 (52%). 1925 deaths were described. The results were corrected for non-response bias, and extrapolated to estimated annual rates after seasonal adjustment for death causes, and we estimate that 705 (1.3%, 95% CI 1.0–1.6) deaths resulted from euthanasia or PAS. In 1796 (3.2%, 2.7–3.8) cases, lethal drugs were given without the explicit request of the patient. Alleviation of pain and symptoms with opioids in doses with a potential life-shortening effect preceded death in 10 416 (18.5%, 17.3–19.7) cases and non-treatment decisions in 9218 (16.4%, 15.3–17.5) cases, of which 3261 (5.8%, 5.1–6.5) with the explicit intention of ending the patient's life.

Interpretation ELDs are prominent in medical practice in Flanders. The frequency of deaths preceded by an ELD is similar to that in the Netherlands, but lower than that in Australia. However, in Flanders the rate of administration of lethal drugs to patients without their explicit request is similar to Australia, and significantly higher than that in the Netherlands.

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Department of Medical Sociology and Health Sciences, Free University of Brussels, Brussels, Belgium (L Deliens PhD, J Bilsen MSc); Centre for Environmental Philosophy and Bioethics (L Deliens, F Mortier PhD); and Department of General Practice (M Cosyns MD), Ghent University, Ghent; Flemish Institute of General Practice, Antwerp (R Vander Stichele MD); Preventive and Social Health Care Division, Ministry of Flanders, Brussels (J Vanoverloop MSc); Ear, Nose and Throat Surgery, Academic Hospital, Catholic University of Nijmegen, Nijmegen, Netherlands (K Ingels MD)

Correspondence to: Dr Luc Deliens, Department of Medical Sociology and Health Sciences, Free University of Brussels, Laarbeeklaan 103, B-1090 Brussels, Belgium (e-mail: Luc.Deliens@vub.ac.be)

Introduction

Belgium has no formal registration and authorisation procedure for end-of-life decisions (ELDs) in medical practice. Although euthanasia (the administration of drugs with the explicit intention to shorten the patient's life at the explicit request of the patient) is illegal in Belgium and treated as intentionally causing death under criminal law, prosecutions are exceptional. Legalisation of euthanasia is intensely discussed, both by the official Advisory Committee on Bioethics and the Belgian Parliament.¹ In this country, the actual number of deaths by euthanasia, physician-assisted suicide (PAS), and other ELDs is not known.

This research was done in Flanders, the Dutch-speaking region of Belgium, where 60% of the population lives. In 1998, Flanders had about 5.9 million inhabitants and 56 354 deaths. There have been several attempts at establishing reliable ELD incidence estimates in various countries, with different methods. Some researchers chose to do interviews with a random sample of physicians.^{2,3} The most reliable method, however, is the death-certificate method,^{4,5} in which a random sample is taken from the official death register for a specific area and time, and physicians who sign the death certificate are questioned. A research project using this method was first done in the Netherlands in 1990 and repeated in 1995.^{4,5} It attracted major international attention.^{6–8} Our study repeats one done in the Netherlands in Flanders, which has the same language, a similar culture and history, but a different legal approach towards euthanasia. Our data were obtained with a similar questionnaire and with an almost identical research design.

As in the Dutch study, three main categories of ELDs were assessed: first, the administration, prescription, or supply of drugs with the intention of shortening the patient's life (physician-assisted death); second, the alleviation of pain and symptoms with opioids in doses with a potential life-shortening effect; and third, the withholding or withdrawal of potentially life-prolonging treatments (non-treatment decisions). The objective of this study is to estimate the frequency of these ELDs in Flanders, and to describe decision making processes and background characteristics of the patients and physicians involved.

Methods

Death-certificate study

All deaths in Flanders are reported to the Preventive and Social Health Care Division of the Ministry of Flanders by means of a detailed death certificate, signed by the reporting physician. Patients' names are not mentioned on death certificates. The department in charge of the cause-of-death statistics selected a stratified sample of deaths of persons aged 1 year or older (thus excluding infant mortality), which occurred between Jan 1 and April 30, 1998. The 20 362 death certificates in this period were proportionally stratified for the five provinces of Flanders and by month of death, and a 20% random sample was taken.

For each sampled death certificate, the signing physician was identified and sent an anonymous self-administered questionnaire (up to a maximum of five per physician). A complex mailing procedure, involving a legal attorney, was developed to ensure that the participating physicians and the deceased persons would remain anonymous. This procedure was approved by the Belgian Medical Disciplinary Board.⁹

In the Netherlands the death-certificate studies were done under legal protection of the physicians by the Supreme Court.^{4,5} In Belgium, such additional protection was lacking, and therefore, the feasibility of the research design and the method were first tested in a pilot study.¹⁰ The response rate of the physicians in the pilot study (55%: 75% among general practitioners (GPs) and 44% among clinical specialists) formed the basis for calculation of the sample size of the nationwide study, designed to estimate percentages with confidence intervals of less than 3%.¹¹ The unit of analysis in this study was not the physician, but the questionnaire related to the sampled death certificate. The survey was done according to the principles of the total design method.¹²

Questionnaire

The questionnaire was based on the Dutch questionnaires of 1990 and 1995.^{4,5} Some questions were added on the basis of preliminary results of the pilot study.¹⁰ There were 51 questions in total and the questionnaire was in three parts. The different ELDs could be deduced from the answers to part one. We avoided the terms euthanasia and patient assisted suicide (PAS) in the questionnaire because of possible confusion. Instead, we described the actual medical practices in detail to the responding physicians and classified their answers in the categories of ELDs defined for this study (table 1). In a Dutch validation study^{4,5} the responses to these descriptions in the postal surveys matched the descriptions obtained by face-to-face interviews. Respondents were also asked whether their practice of ELD was explicitly, additionally, or not at all intended to shorten the patient's life. Physicians were also asked to estimate the amount of time by which life was shortened. Part two allowed researchers to explore the decision making process that preceded the ELD and tested some requirements—eg, previous discussion with and explicit request by the patient; explicit request by closest relatives; consultation with colleagues, &c. Part three obtained some background data on the physician. On receipt of the completed questionnaire, mortality data and patient characteristics were anonymously linked to the interview data.

The main ELD category of physician-assisted death was further divided into subcategories of euthanasia, PAS (prescription or supply of drugs with the explicit intention of enabling the patient to shorten his or her life), and administration of drugs with the explicit intention to shorten the patient's life without the explicit request of the patient. The administration of lethal drugs by both patient and physician was regarded as euthanasia.

Control for response bias and weighting procedure

Checks for response bias were based on a comparison of the response sample with all death certificates from Jan 1 to April 30, 1998. The sample was adjusted for the characteristics with significant differences in distribution—ie, place of death and nature of death. To provide reliable estimates of annual rates, the results of the adjusted sample from the first 4 months were extrapolated, after weighting for seasonal differences of the distribution of

causes of death in 1998. 95% CIs of the rates of ELDs were calculated, on the basis of a weighted multinomial logistic regression and the χ^2 test was applied.¹³

Results

A total of 3999 death certificates were selected (20% of stratified random sample) and questionnaires were sent to the 2585 physicians who signed them. Of the physicians, 30% (781) signed more than one sampled death certificate (62% [487] of the clinical specialists identified). The overall response rate of the physicians was 52% (1355). Because of the strict procedure for guaranteeing anonymity of participating physicians, some physicians could not be identified as GP or clinical specialist. Of the identified GPs 65% (792) returned their questionnaire(s), and of the identified clinical specialists 40% (460) did so. The response rate of the physicians who received only one questionnaire was 56% (1015) versus 44% (340) of the physicians who received more than one. In total, 1930 questionnaires were returned. Five questionnaires were excluded because of incomplete or inconsistent answers. The results of this study are thus based on 1925 questionnaires (48% of the questionnaires sent out). In the selected sample of 3999 deaths, 59% (2352) were certificated by clinical specialists, but in the response sample only 45% (804) were identified. However, in the process of weighting, the percentage of deaths certified by clinical specialists became 58.3% (1122).

The 1925 returned questionnaires were compared with the national mortality data for 20 362 deaths from Jan 1 to April 30, 1998, and were similar with respect to: patient characteristics (age, sex, education, job status, marital status, and place of residence); and the mortality characteristics of month of death and province of death. For nature of death and place of death, there was a significant difference between the response sample and the 4 month population (accidents slightly over-represented *vs* natural deaths and home highly over-represented *vs* hospital or nursing home). The results were adjusted for these two characteristics. Additionally, the results were seasonally adjusted and extrapolated to all deaths in 1998 by weighting for cause of death—eg, cancer was slightly under-represented.

720 (4.4%) of the 1925 returned questionnaires in our sample recorded that an ELD had been made. The difference between the observed incidences in our sample and the weighted estimates for the annual population are minimal (table 1).

Incidence estimates

Among all registered deaths in Flanders in 1998, death was estimated to have occurred unexpectedly in 33.3% (95% CI 31.9–34.8). ELD was possible, but was not made, in 27.4% (95% CI 26.0–28.7). Death was preceded by at least one ELD in around 40% (table 1). In cases for whom an ELD was possible, an ELD was generally made by the physician. Of all deaths, more than 4% were estimated to have resulted from the use of lethal drugs. In 18.5% of patients, high-dose opioids were used to alleviate pain and resulted in unintentional death in almost three-quarters of those individuals. Death by this means was intentional in the remainder. Non-treatment decisions were made in 16.4% of all deaths, and resulted in unintentional death in over a third of those. Death by this means was intentional in the remainder.

ELDs: demographic characteristics of patients

The percentage of deaths preceded by an ELD varied significantly with the cause and place of death. Table 2

ELDs	Observed cases (n=1925)	Weighted* (95% CI)	Estimates for all deaths in 1998 (n=56 354)†
Administration, prescription, or supply of drugs with the explicit intention of shortening patient life	85 (4.4%)	4.4% (3.9–5.1)	2501
Euthanasia	22 (1.1%)	1.1% (0.9–1.5)	640
Physician-assisted suicide	3 (0.2%)	0.1% (0.05–0.3)	65
Ending of life without the patient's explicit request	60 (3.1%)	3.2% (2.7–3.8)	1796
Alleviation of pain and symptoms with opioids in doses with a potential life-shortening effect	332 (17.2%)	18.5% (17.3–19.7)	10 416
Not intended‡	235 (12.2%)	13.2% (12.2–14.3)	7450
Additionally intended‡	97 (5%)	5.3% (4.6–6.0)	2966
Withholding or withdrawing of potential life-prolonging treatment	303 (15.7%)	16.4% (15.3–17.5)	9218
Not intended‡	128 (6.6%)	6.7% (6.0–7.5)	3784
Additionally intended‡	73 (3.8%)	3.9% (3.3–4.5)	2173
Explicit intention‡	102 (5.3%)	5.8% (5.1–6.5)	3261
All deaths with an ELD	720 (37.4%)	39.3% (37.8–40.8)	22 135

*The percentages are adjusted to patient/mortality characteristics of all deaths in 1998. †The estimates are adjusted to patient/mortality characteristics and extrapolated to all deaths in 1998 (preliminary figure for 1998; source: Ministry of Flanders, Preventive and Social Health Care Division). ‡Shortening of patient life.

Table 1: **Observed and estimated frequency of ELDs in medical practice in Flanders in 1998**

shows the rate of ELDs according to the demographic and mortality characteristics. Euthanasia (including PAS) is practised most often in patients: with a high educational level; with cancer; and at home. Ending of life without the patient's explicit request is practised most often on divorced and cancer patients. Alleviation of pain and symptoms with a potential life shortening effect is practised most often on patients: with a high educational level; who are married; and who have cancer. Non-treatment decisions are practised most often on: people older than 80 years; those with a low educational level; and patients dying in a hospital or a nursing home; but less often in patients with cardiovascular disease.

ELDs: characteristics of physician

In all non-sudden deaths, the percentage preceded by an ELD was greatest among patients treated by physicians who: were aged 35–44 years; attended a non-Catholic university; and had received postgraduate training in palliative or terminal care (table 3). Euthanasia (including PAS) did not vary according to physician characteristics. Ending of life without the patient's explicit request was most frequently practised by physicians who: were younger than 34; graduated from non-Catholic universities; and were non-religious. Alleviation of pain and symptoms with a potential life-shortening effect was practised most often by physicians

Patient variable	Deaths studied (n=1925)	Incidence of ELDs in 1998 among all deaths				
		EUTH* and PAS (n=25)	NOR (n=60)	APS (n=332)	NTD (n=303)	All ELDs (n=720)
Age (years)						
1–64	344	9 (2.6%)	14 (4.1%)	68 (19.8%)	31 (9.0%)	122 (35.5%)
65–79	639	7 (1.1%)	24 (3.8%)	114 (17.8%)	93 (14.6%)	238 (37.2%)
≥80	942	9 (1.0%)	22 (2.3%)	150 (15.9%)	179 (19.0%)	360 (38.2%)
p value†		0.057	0.149	0.241	0.0004	0.662
Sex						
Male	935	10 (1.1%)	30 (3.2%)	163 (17.4%)	136 (14.5%)	339 (36.3%)
Female	990	15 (1.5%)	30 (3.0%)	169 (17.1%)	167 (16.9%)	381 (38.5%)
p value†		0.388	0.822	0.833	0.162	0.313
Educational level						
Primary school	940	5 (0.5%)	25 (2.7%)	153 (16.3%)	165 (17.6%)	348 (37.0%)
High school (not graduated)	336	4 (1.2%)	14 (4.2%)	54 (16.1%)	58 (17.3%)	130 (38.7%)
High school or college graduate	262	10 (3.8%)	9 (3.4%)	61 (23.3%)	29 (11.1%)	109 (41.6%)
Not known‡	387	6 (1.6%)	12 (3.1%)	64 (16.5%)	51 (13.2%)	133 (34.4%)
p value		0.0001	0.375	0.023	0.038	0.392
Marital status						
Unmarried	235	2 (0.9%)	4 (1.7%)	35 (14.9%)	37 (15.7%)	78 (33.2%)
Married	785	12 (1.5%)	29 (3.7%)	163 (20.8%)	112 (14.3%)	316 (40.3%)
Widowed	819	9 (1.1%)	20 (2.4%)	126 (15.4%)	143 (17.5%)	298 (36.4%)
Divorced	86	2 (2.3%)	7 (8.1%)	8 (9.3%)	11 (12.8%)	28 (32.6%)
p value		0.647	0.013	0.004	0.299	0.125
Cause of death						
Cancer	467	12 (2.6%)	28 (6.0%)	183 (39.2%)	83 (17.8%)	306 (65.5%)
Cardiovascular disease	558	2 (0.4%)	11 (2.0%)	34 (6.1%)	59 (10.6%)	106 (19.0%)
Disease of the nervous system	242	3 (1.2%)	9 (3.7%)	38 (15.7%)	46 (19.0%)	96 (39.7%)
Other	658	8 (1.2%)	12 (1.8%)	77 (11.7%)	115 (17.5%)	212 (32.2%)
p value		0.021	0.0002	<0.0001	0.001	<0.0001
Place of death						
Home	593	14 (2.4%)	20 (3.4%)	99 (16.7%)	63 (10.6%)	196 (33.1%)
Hospital	786	8 (1.0%)	23 (2.9%)	144 (18.3%)	145 (18.4%)	320 (40.7%)
Nursing home	463	3 (0.6%)	14 (3.0%)	79 (17.1%)	92 (19.9%)	188 (40.6%)
Other‡	83	-	3 (3.6%)	10 (12.0%)	3 (3.6%)	16 (19.3%)
p value		0.032	0.889	0.707	0.0002	0.007

*EUTH=euthanasia; PAS=physician-assisted suicide; NOR=ending of life without patient's explicit request; APS=alleviation of pain and symptoms with opioids in doses with a potential life shortening effect; NTD=withholding or withdrawing of a potential life prolonging treatment. †Significance of difference in distribution between cases with and without ELD-category, χ^2 test. ‡Not included in the χ^2 test.

Table 2: **ELDs according to patient demographic and mortality data**

Physician variable	Non-sudden deaths studied (n=1229)	ELDs in 1998 among all non-sudden deaths				
		EUTH† and PAS (n=25)	NOR (n=60)	APS (n=332)	NTD (n=303)	All ELDs (n=720)
Age (years)						
≤34	239	2 (0.8%)	21 (8.8%)	62 (25.9%)	60 (25.1%)	145 (60.7%)
35–44	407	13 (3.2%)	18 (4.4%)	121 (29.7%)	111 (27.3%)	263 (64.6%)
45–54	378	6 (1.6%)	17 (4.5%)	103 (27.2%)	100 (26.5%)	226 (59.8%)
≥55	205	4 (2.0%)	4 (2.0%)	46 (22.4%)	32 (15.6%)	86 (42.0%)
p value‡		0.183	0.008	0.278	0.011	<0.0001
Sex						
Male	1014	23 (2.3%)	49 (4.8%)	271 (26.7%)	249 (24.6%)	592 (58.4%)
Female	215	2 (0.9%)	11 (5.1%)	61 (28.4%)	54 (25.1%)	128 (59.5%)
p value		0.207	0.861	0.621	0.863	0.755
University of graduation						
Catholic	702	12 (1.7%)	23 (3.3%)	188 (26.8%)	163 (23.2%)	386 (55.0%)
Other	527	13 (2.5%)	37 (7.0%)	144 (27.3%)	140 (26.6%)	334 (63.4%)
p value		0.352	0.003	0.832	0.178	0.003
Religion						
Christian	522	14 (2.7%)	21 (4.0%)	150 (28.7%)	119 (22.8%)	304 (58.2%)
Catholic	289	5 (1.7%)	5 (1.7%)	80 (27.7%)	79 (27.3%)	169 (58.5%)
Other	112	1 (0.9%)	7 (6.3%)	37 (33.0%)	24 (21.4%)	69 (61.6%)
Not religious	287	4 (1.4%)	27 (9.4%)	61 (21.3%)	76 (26.5%)	168 (58.5%)
p value		0.457	0.0002	0.052	0.357	0.931
Type of physician						
General practitioner	681	16 (2.3%)	38 (5.6%)	188 (27.6%)	164 (24.1%)	406 (59.6%)
Clinical specialist	548	9 (1.6%)	22 (4.0%)	144 (26.3%)	139 (25.4%)	314 (57.3%)
p value		0.383	0.206	0.602	0.604	0.412
Postgraduate training in palliative or terminal care						
Yes	747	19 (2.5%)	37 (5.0%)	222 (29.7%)	180 (24.1%)	458 (61.3%)
No	482	6 (1.2%)	23 (4.8%)	110 (22.8%)	123 (25.5%)	262 (54.4%)
p value		0.115	0.885	0.008	0.572	0.016

*Percentages shown here are percentages of number of cases studied in which ELD making was possible for the physician; it excluded all sudden death situations. †EUTH=euthanasia; PAS=physician-assisted suicide; NOR=ending of life without patient's explicit request; APS=alleviation of pain and symptoms with opioids in doses with a potential life-shortening effect; NTD=withholding or withdrawing of a potential life-prolonging treatment. ‡Significance of difference in distribution between cases with and without ELD-category, χ^2 test.

Table 3: ELDs in all non-sudden death situations according to physician characteristics*

with postgraduate training in palliative or terminal care. Non-treatment decisions were practised least often by physicians older than 55 years.

ELDs: characteristics of decision making process

In most cases euthanasia and PAS were discussed with relatives and non-staff members, and in just under half with other physicians or nurses. Rarely was the decision

made without consultation (table 4). In general, the patient was perceived by the physician as competent. For all deaths preceded by an ELD, the time by which life was shortened was estimated by the physician as less than 1 day in just under a quarter of cases, with most (80%) by less than a week. ELDs taken without previous discussion with the patient or a previously stated wish were made in about two-thirds to three-quarters of all

Characteristic of ELD	EUTH* and PAS (n=25)	NOR (n=60)	APS (n=332)	NTD (n=303)	Total (n=720)
Previous discussion of decision with patient					
Discussed, explicit request made by patient	25 (100%)	—	40 (12%)	32 (11%)	97 (14%)
No explicit request, but discussed or wish stated	—	23 (38%)	68 (21%)	47 (16%)	138 (19%)
Not discussed, no previous wish stated	—	37 (62%)	210 (63%)	220 (73%)	467 (65%)
Unknown	—	—	14 (4%)	4 (1%)	18 (3%)
Explicit request made by closest relatives					
Yes	16 (64%)	32 (53%)	70 (21%)	70 (23%)	188 (26%)
No	9 (36%)	28 (47%)	248 (75%)	229 (76%)	514 (71%)
Unknown	—	—	14 (4%)	4 (1%)	18 (3%)
Patient competent at time of decision					
Yes	21 (84%)	7 (12%)	101 (30%)	49 (16%)	178 (25%)
No	4 (16%)	41 (68%)	140 (42%)	198 (65%)	383 (53%)
Unknown	—	12 (20%)	91 (27%)	56 (19%)	159 (22%)
Decision discussed with others†					
Colleagues	12 (48%)	24 (40%)	124 (37%)	142 (47%)	302 (42%)
Nursing staff	12 (48%)	24 (40%)	144 (43%)	138 (46%)	318 (44%)
Relatives or others	21 (84%)	35 (58%)	187 (56%)	168 (55%)	411 (57%)
No	2 (8%)	11 (18%)	74 (22%)	45 (15%)	132 (18%)
Estimated amount of time by which life was shortened					
<24 h	6 (24%)	18 (30%)	185 (56%)	102 (34%)	311 (43%)
1 day–1 week	14 (56%)	33 (55%)	94 (28%)	144 (48%)	285 (40%)
1 week–1 month	4 (16%)	7 (12%)	31 (9%)	36 (12%)	78 (11%)
>1 month	1 (4%)	1 (2%)	6 (2%)	12 (4%)	20 (3%)
Unknown	—	1 (2%)	16 (5%)	9 (3%)	26 (4%)

*EUTH=euthanasia; PAS=physician-assisted suicide; NOR=ending of life without the patient's explicit request; APS=alleviation of pain and symptoms with opioids in doses with a potential life shortening effect; NTD=withholding or withdrawing of a potential life prolonging treatment. †Multiple responses possible.

Table 4: Characteristics of the ELD making process in 1998

	Netherlands 1990†	Netherlands 1995†	Australia 1995†	Flanders 1998
All deaths	128 786	135 546	125 771	56 354
Administration, prescription, or supply of drugs with the explicit intention of shortening patient life				
Euthanasia	(1.7%, 1.4–2.1)	(2.4%, 2.1–2.6)	(1.7%, 1.1–2.3)	640 (1.1%, 0.9–1.5)
Physician-assisted suicide	(0.2%, 0.1–0.3)	(0.2%, 0.1–0.3)	(0.1%, 0.02–0.2)	65 (0.1%, 0.05–0.3)
Ending of life without the patient's explicit request	(0.8%, 0.6–1.1)	(0.7%, 0.5–0.9)	(3.5%, 2.7–4.3)	1796 (3.2%, 2.7–3.8)
Alleviation of pain and symptoms with opioids in doses with a potential life shortening effect	(18.8%, 17.9–19.9)	(19.1%, 18.1–20.1)	(30.9%, 28.0–33.8)	10 416 (18.5%, 17.3–19.7)
Withholding or withdrawal of potential life prolonging treatment	(17.9%, 17.0–18.9)	(20.2%, 19.1–21.3)	(28.6%, 25.7–31.5)	9218 (16.4%, 15.3–17.5)
All deaths with an ELD	(39.4%, 38.1–40.7)	(42.6%, 41.3–43.9)	(64.8%, 61.9–67.9)	22 135 (39.3%, 37.8–40.8)

*Percentages and 95% CIs shown in parentheses.

†Absolute figures not available.

Table 5: **Estimated rate of ELDs in medical practice in Netherlands, Australia, and Flanders**

categories apart from euthanasia. The percentage of ELDs explicitly requested by close relatives varied. Patient life was ended without being requested and by the withdrawal or withholding of treatment mainly among incompetent patients. Discussion with colleagues took place more often in these cases than for patients who received opioids with a potential life shortening effect.

ELDs: Dutch and Australian studies

We compared our results with those of similar studies done in Australia and the Netherlands. The percentage of deaths with an ELD in our study and the Dutch study of 1990 were very similar, but differed from those in Australia (table 5). Furthermore, the estimated rate of ELDs in which life-shortening was intended was similar in both the Dutch and Belgian results,^{4,5} but not in the Australian results, which were higher.^{3–5} The frequency of euthanasia in Flanders is similar to that seen in the Netherlands, 1990, where the practice is quasi-legal, and in Australia, but lower than that seen in the Netherlands in 1995. However, the rate of ending patient life without their request in Flanders is substantially higher than in the Netherlands but close to the Australian result.

Discussion

We have shown that ELDs are common in medical practice in Flanders. The strict Belgian law has not prevented physicians from practising euthanasia and other ELDs, with ELDs explicitly intended to shorten life involved in about 10% of deaths.

Our results show the difficulties of obtaining reliable data on euthanasia and other end-of-life medical practices in a country with no formal registration and authorisation procedure for ELDs, and where criminal prosecution of (some) ELDs is a possibility. To investigate this highly sensitive medical practice, we applied a survey method that guaranteed physician immunity. Although the physician response rate of 52% was lower than in the Dutch death-certificate studies,^{4,5} it is close to the 54% mean response rate of physician postal surveys¹⁴ and higher than the response rate of most medical surveys in Belgium.¹⁵ Nevertheless, one has to allow for the possibility of a response bias.

The reasons why physicians did not respond might be lack of time¹⁶ or research interest,¹⁷ but we believe that fear of legal consequences and participation costs might have played a part.^{12,16} The response rate was lower in physicians who received more than one questionnaire than in those with only one. Because of the guarantee of an anonymous response, we could not do a non-response study.

There are several arguments against the possibility of overestimation of frequency. First, 50 years of validity research have shown that in surveying socially undesirable behaviour, the difficulty is not over-reporting

but rather under-reporting.¹⁸ Second, our results are consistent in the five provinces of Flanders and are well in line with the findings of our pilot study in a census of all 269 deaths in the city of Hasselt.¹⁰ Third, the overall results are well in line with those for the subset with the highest response rate—namely, GPs.

The low response rate of clinical specialists might mainly be caused by higher participation costs, since many clinical specialists received more than one questionnaire. In addition, hospital death certificates are often not signed by the treating clinical specialist, but by a colleague on duty at the time of death. These physicians might be less likely to respond than the treating specialist. The low response rate of clinical specialists explains the differences in cause, place, and nature of death between our sample and the national mortality data. However, the weighting procedure based on these factors fully corrected the differences between the proportions of clinical specialists and GPs in the data set and the original sample. Hence, we believe that the results are valid estimations of the true frequency of ELDs in Flanders. There is also the possibility of under-reporting because of social mores, especially in a country where more than two-thirds of hospitals are Catholic.

Nationwide estimates of the rate of ELDs have so far been made for only the Netherlands, Australia, and the USA.^{2–5} Reliable comparisons can be made between our study and the Dutch and Australian studies, because all used the same questionnaire.^{3–5} The overall results were similar for our study and for that in the Netherlands but differed from those of the Australian study. However, major differences in rates of different types of ELDs have been found. Future research has to determine why physicians in these countries take different options at the end of life of their patients.

The boundary between euthanasia and ending patient life without their request is sometimes blurred—ie, among our 25 observed euthanasia cases, three physicians reported an explicit request by the patient and, at the same time, the patient's incompetence. Similar conflicting data were found in the Dutch studies, which used similar questionnaires.⁵ In future, questions should be included to determine how physicians define incompetence, how they assess patients on predefined criteria, and how incompetence judgments affect ELDs.

A restrictive public policy approach that prohibits euthanasia and PAS, but allows other medical ELDs, could be more protective of the rights of patients than an open approach.¹⁹ Our data, however, suggest that restrictive public policy does not guarantee the best patient protection—for example, the administration, prescription, or supply of lethal drugs in Flanders is discussed less often with the patient and practised more without an explicit request of the patient than in the Netherlands.⁵ Similar

differences are found for the alleviation of pain and symptoms and for non-treatment decisions.⁵

In interpreting differences between Flanders, the Netherlands, and Australia, differences in culture, patient attitudes, physician attitudes, and health-care organisation should be taken into account. Nevertheless, our study raises the question of why more physicians in Flanders and Australia, than in the Netherlands, choose to intentionally end the life of some of their patients without the patient's explicit request. Perhaps less attention is given to requirements of careful end-of-life practice in a society with a restrictive approach than in one with an open approach that tolerates and regulates euthanasia and PAS.

Contributors

Luc Deliens, Freddy Mortier, Robert Vander Stichele, and Johan Bilsen were involved in the study conception and design, data analysis and interpretation, and writing of the article. Marc Cosyns, Johan Vanoverloop, and Koen Ingels were involved in the study conception and design. Johan Vanoverloop was also involved in data analysis and interpretation.

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